# FluWatch

Public Health Agency of Canada | Agence de la santé publique du Canada

**February 28 to March 5, 2016 (Week 9)**

## Overall Summary

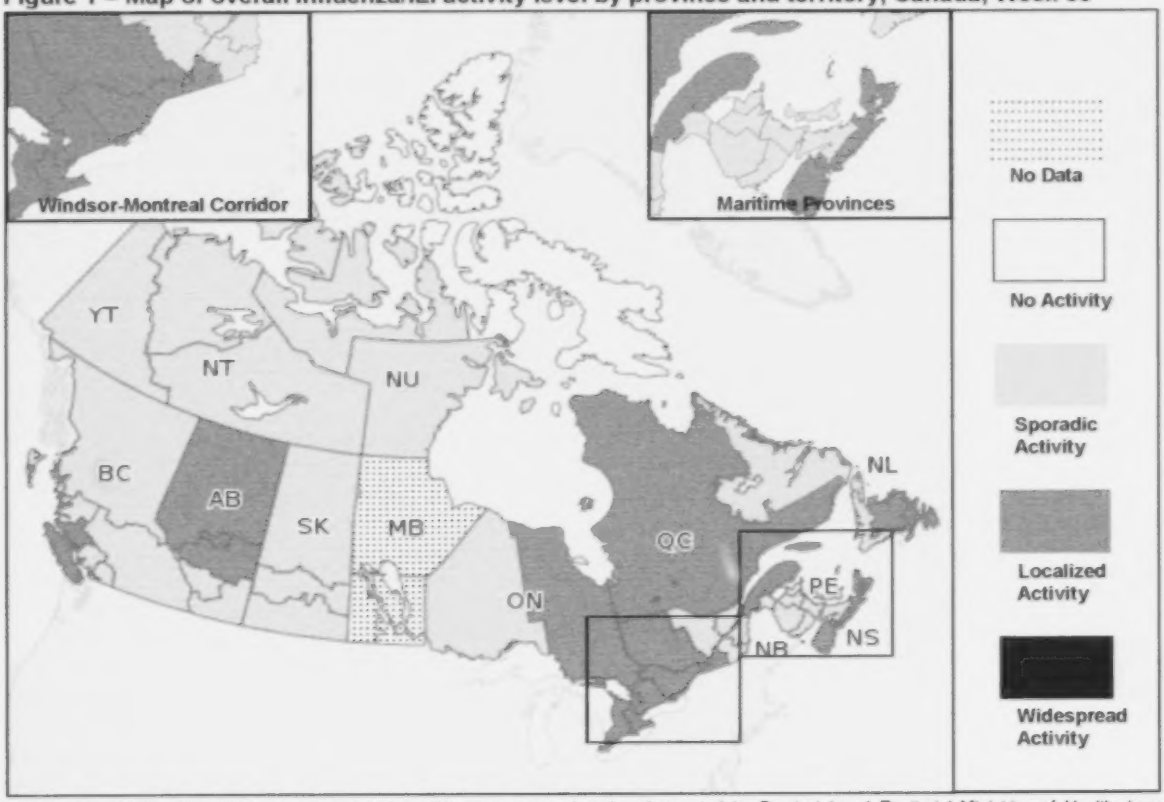
- Influenza activity continues to increase and is typical of peak season levels.
- For a second week in a row, the Eastern provinces of Canada accounted for the majority of influenza activity nationally. Nearly all reporting regions now have sporadic or localized activity.
- In week 09, 45 outbreaks were reported with the majority of outbreaks reported in long-term care facilities.
- Adults greater than 45 years of age accounted for the majority of hospitalizations in week 09.
- Influenza A(H1N1) remains the most common influenza subtype circulating in Canada.
- For more information on the flu, see our Flu(influenza) web page.

**Are you a primary health care practitioner (General Practitioner, Nurse Practitioner or Registered Nurse) interested in becoming a FluWatch sentinel for the 2015-16 influenza season? Contact us at FluWatch@phac-aspc.gc.ca**

## Influenza/Influenza-like Illness (ILI) Activity (geographic spread)

In week 09, influenza activity was present in almost every reporting region in Canada. A total of 19 regions reported localized activity levels with the majority in the central and eastern regions of Canada. Sporadic influenza/ILI activity was reported in 27 regions across Canada.

**Figure 1 – Map of overall influenza/ILI activity level by province and territory, Canada, Week 09**

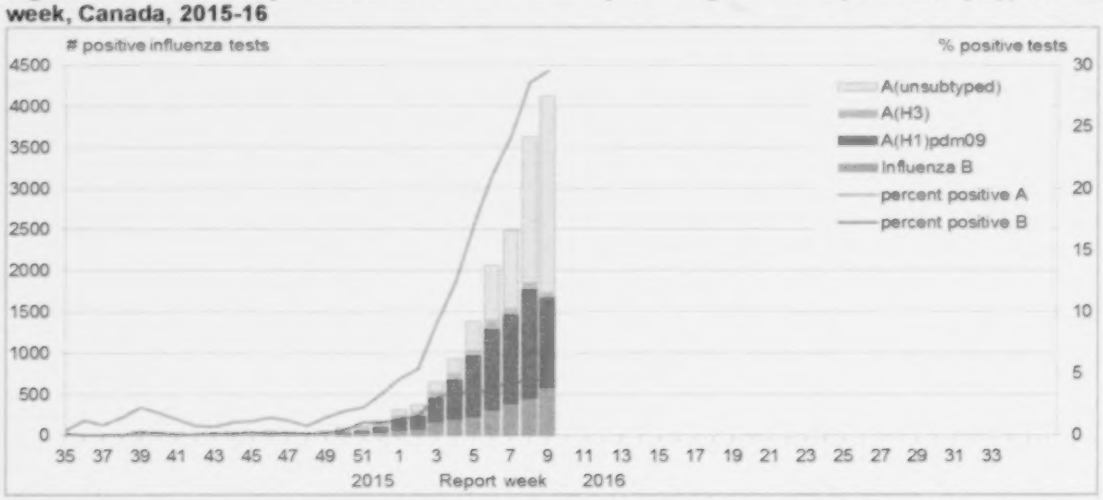



Note: Influenza/ILI activity levels, as represented on this map, are assigned and reported by Provincial and Territorial Ministries of Health, based on laboratory confirmations, sentinel ILI rates and reported outbreaks. Please refer to detailed definitions at the end of the report. Maps from previous weeks, including any retrospective updates, are available in the mapping feature found in the Weekly Influenza Reports.

## Laboratory Confirmed Influenza Detections

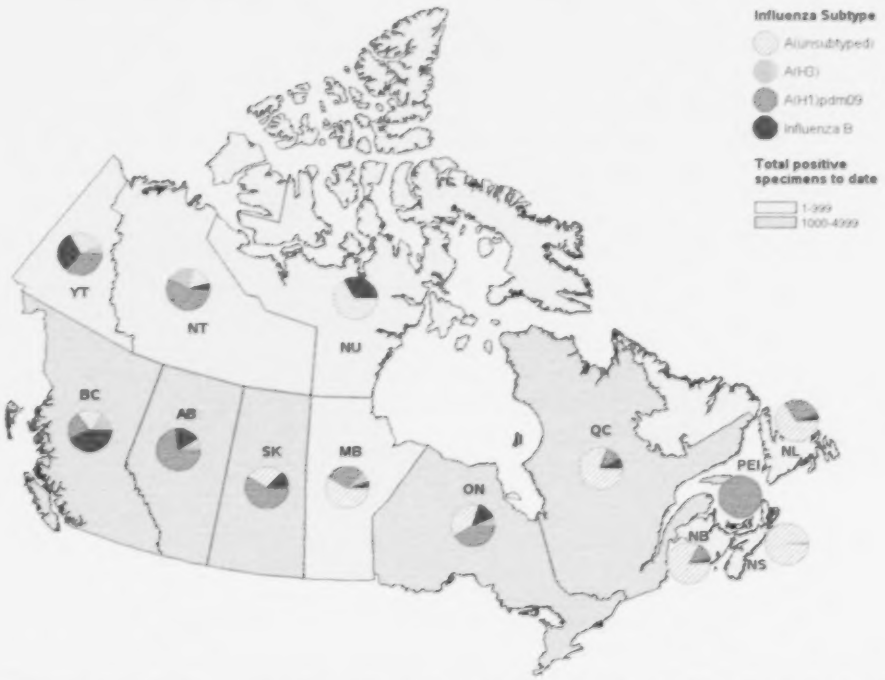
The percent positive for influenza increased slightly from 33% in week 08 to 34% in week 09 (Figure 2). This small increase from the previous week may suggest that the influenza season is near its peak. Compared to the previous five seasons, the percent positive (34%) reported in week 09 was above the five year average for that week and exceeded the expected levels (range 14.1%-17.1%). With the late start to the 2015-16 influenza season, these above normal levels are not unexpected and are typical of peak season levels.

**Figure 2 – Number of positive influenza tests and percentage of tests positive, by type, subtype and report week, Canada, 2015-16**




In week 09, there were 4,129 positive influenza tests reported. Increased detections of influenza in the central and eastern provinces have been noted in the last few weeks. In week 09, the majority of influenza detections were reported in the provinces of ON and QC (67%). To date, 84% of influenza detections have been influenza A and among those subtyped, the vast majority have been influenza A(H1N1) [89% (6514/7325)].

**Figure 3 – Cumulative numbers of positive influenza specimens by type/subtype and province, Canada, 2015-16**




Note: Specimens from NT, YT, and NU are sent to reference laboratories in other provinces. Cumulative data include updates to previous weeks.

To date this season, detailed information on age and type/subtype has been received for 14,493 cases. Adults aged 20-44 years accounted for the greatest proportion of influenza cases (Table 1). Adults aged 20-44 and 45-64 years accounted for 56% of reported influenza A(H1N1) cases. Children 5-19 years and adults 20-44 years accounted for 58% of all influenza B cases reported.

**Table 1 – Weekly and cumulative numbers of positive influenza specimens by type, subtype and age-group reported through case-based laboratory reporting[1], Canada, 2015-16**

| Age groups (years) | Weekly (Feb. 28, 2016 to Mar. 5, 2016) | | | | | Cumulative (Aug. 30, 2015 to Mar. 5, 2016) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Influenza A | | | | B | Influenza A | | | | B | Influenza A and B | |
| | A Total | A(H1) pdm09 | A(H3) | A (UnS)[3] | Total | A Total | A(H1) pdm09 | A(H3) | A (UnS)[3] | Total | # | % |
| <5 | 488 | 114 | <5 | x | 67 | 2319 | 1155 | 50 | 1114 | 308 | 2627 | 18.1% |
| 5-19 | 254 | 74 | <5 | x | 107 | 1369 | 722 | 72 | 575 | 651 | 2020 | 13.9% |
| 20-44 | 554 | 170 | 5 | 379 | 93 | 3288 | 1829 | 123 | 1336 | 630 | 3918 | 27.0% |
| 45-64 | 618 | 154 | <5 | x | 40 | 3123 | 1575 | 150 | 1398 | 292 | 3415 | 23.6% |
| 65+ | 445 | 113 | 6 | 326 | 67 | 2180 | 826 | 322 | 1032 | 333 | 2513 | 17.3% |
| Total | 2359 | 625 | 14 | 1720 | 374 | 12279 | 6107 | 717 | 5455 | 2214 | 14493 | 100.0% |
| Percentage[2] | 86.3% | 26.5% | 0.6% | 72.9% | 13.7% | 84.7% | 49.7% | 5.8% | 44.4% | 15.3% | | |

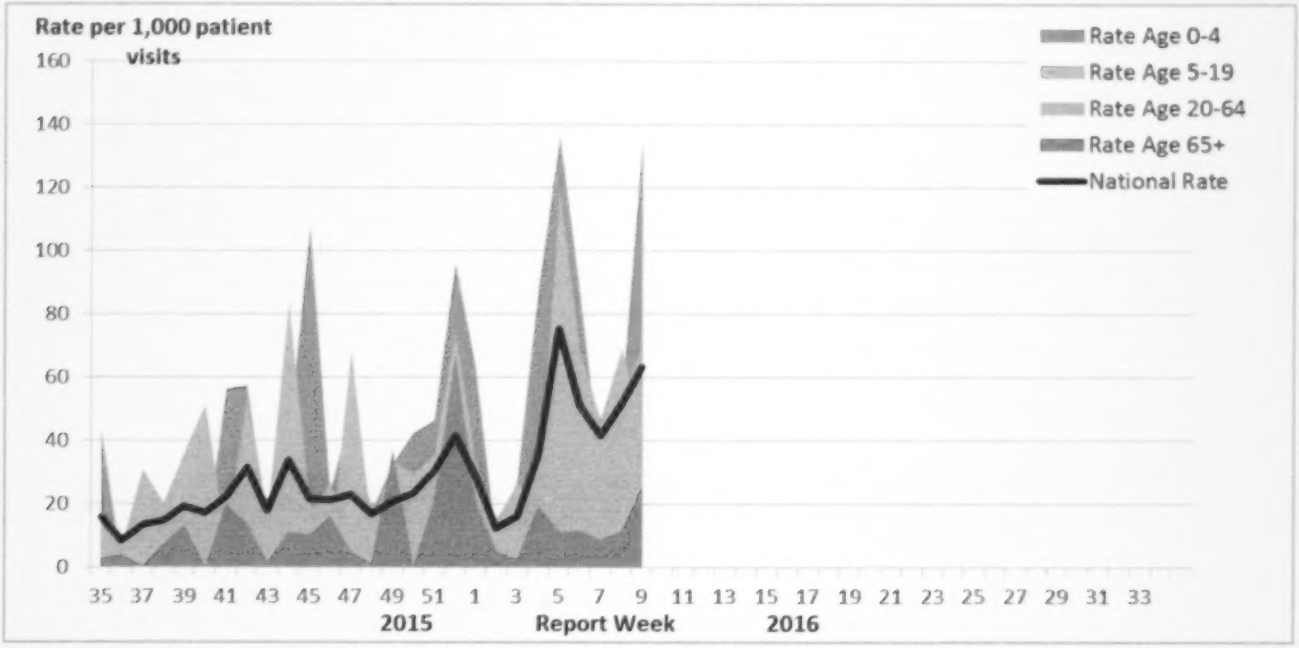
[1]Table 1 includes specimens for which demographic information was reported. These represent a subset of all positive influenza cases reported.
[2]Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections.
[3]UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available.
x - Suppressed to prevent residual disclosure

For data on other respiratory virus detections see the Respiratory Virus Detections in Canada Report on the Public Health Agency of Canada website.

## Influenza-like Illness Consultation Rate

The national ILI consultation rate increased from the previous week from 51.7 per 1,000 patient visits in week 08, to 63.3 per 1,000 patient visits in week 09. In week 09, the highest ILI consultation rate was found in children 0-4 years of age (137.0 per 1,000) and the lowest was found in the ≥65 years age group (25.2 per 1,000) (Figure 4).

**Figure 4 – Influenza-like illness (ILI) consultation rates by age group and week, Canada, 2015-16**

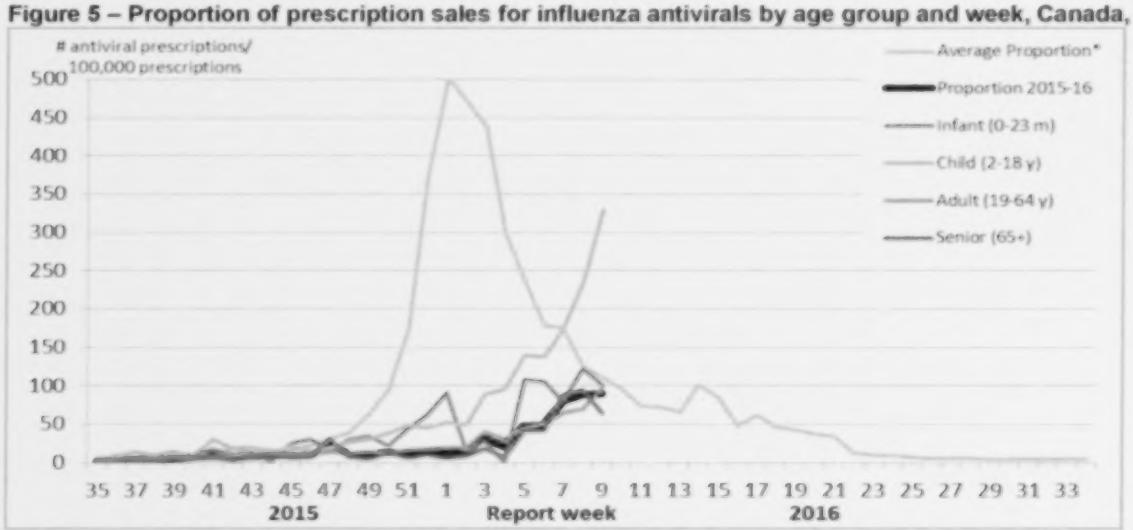



Delays in the reporting of data may cause data to change retrospectively. In BC, AB, and SK, data are compiled by a provincial sentinel surveillance program for reporting to FluWatch. Not all sentinel physicians report every week.

## Pharmacy Surveillance

During week 09, the proportion of prescriptions for antivirals increased to 89.4 antiviral prescriptions per 100,000 total prescriptions, which is lower than the five year historical average. Since week 02, the highest proportion of prescriptions for antivirals has been reported among children. In week 09, the proportion reported among children was 329.1 per 100,000 total prescriptions.

**Figure 5 – Proportion of prescription sales for influenza antivirals by age group and week, Canada, 2015-16**




Note: Pharmacy sales data are provided to the Public Health Agency of Canada by Rx Canada Inc. and sourced from major retail drug chains representing over 3,000 stores nationwide (excluding Nunavut) in 85% of Health Regions. Data provided include the number of new antiviral prescriptions (for Tamiflu [oseltamivir] and Relenza [zanamivir]) and the total number of new prescriptions dispensed by Province/Territory and age group.

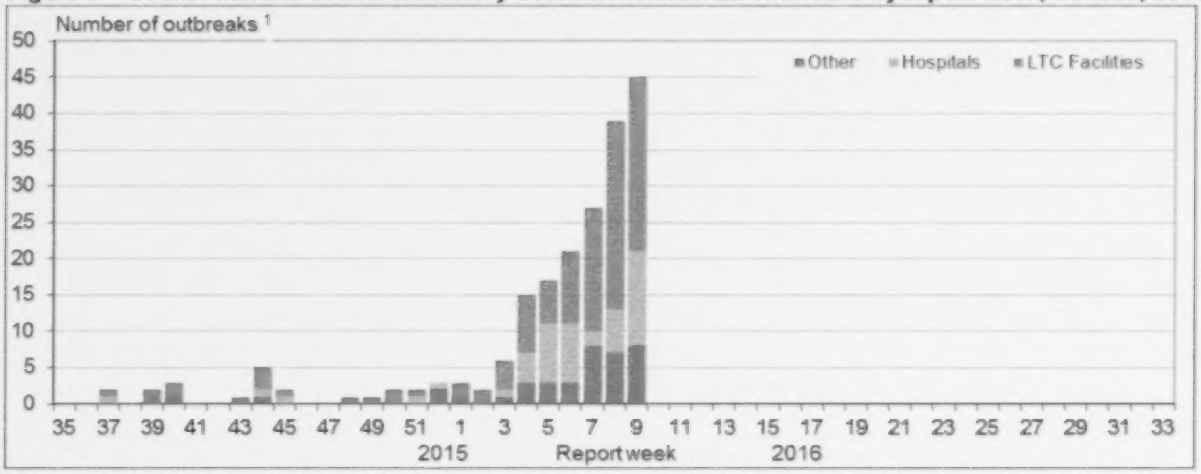
*The average weekly proportion includes data from April 2011 to March 2015.

## Influenza Outbreak Surveillance

In week 09, 45 new laboratory confirmed influenza outbreaks were reported: 24 in long-term care facilities (LTC), 13 in hospitals and eight in institutions or community settings. Of the outbreaks with known strains or subtypes, 12 outbreaks were due to influenza A and six outbreaks were due to influenza B. Additionally, four ILI outbreaks were reported in schools.

To date this season, 226 outbreaks have been reported. At week 09 in the 2014-15 season, 1,338 outbreaks were reported and in the 2013-14 season,140 outbreaks were reported.

**Figure 6 – Overall number of new laboratory-confirmed influenza outbreaks by report week, Canada, 2015-2016**




[1]All provinces and territories except NU report influenza outbreaks in long-term care facilities. All provinces and territories with the exception of NU and QC report outbreaks in hospitals. Outbreaks of influenza or influenza-like-illness in other facilities are reported to FluWatch but reporting varies between jurisdictions. Outbreak definitions are included at the end of the report.

## Sentinel Hospital Influenza Surveillance

### Pediatric Influenza Hospitalizations and Deaths

In week 09, 132 hospitalizations were reported by the the Immunization Monitoring Program Active (IMPACT) network (Figure 7). The largest proportion of hospitalizations were in children aged 2-4 years (33%) and the majority of hospitalizations were due to influenza A (87%).

To date this season, 642 laboratory-confirmed influenza-associated pediatric (≤16 years of age) hospitalizations have been reported by the IMPACT network: 531 hospitalized cases were due to influenza A and 111 cases were due to influenza B. Children aged less than 2 years of age accounted for the greatest proportion of hosptalizations cases (37%). To date, 103 intensive care unit (ICU) admissions have been reported. Children aged 2 to 4 years accounted for 29% of ICU admissions. Less than five influenza-associated deaths have been reported.

**Table 2 – Cumulative numbers of pediatric hospitalizations (≤16 years of age) with influenza reported by the IMPACT network, Canada, 2015-16**

| Age Groups | Cumulative (30 Aug. 2015 to 5 Mar. 2016) | | | | | |
|---|---|---|---|---|---|---|
| | Influenza A | | | | Influenza B | Influenza A and B (#(%)) |
| | A Total | A(H1) pdm09 | A(H3) | A (UnS) | B Total | |
| 0-5m | 64 | 18 | <5 | x | 7 | 71 (11%) |
| 6-23m | 148 | 53 | 7 | 88 | 21 | 169 (26%) |
| 2-4y | 161 | 62 | <5 | x | 29 | 190 (30%) |
| 5-9y | 116 | 34 | <5 | x | 36 | 152 (24%) |
| 10-16y | 42 | 16 | <5 | x | 18 | 60 (9%) |
| Total | 531 | 183 | 19 | 329 | 111 | 642 (100%) |

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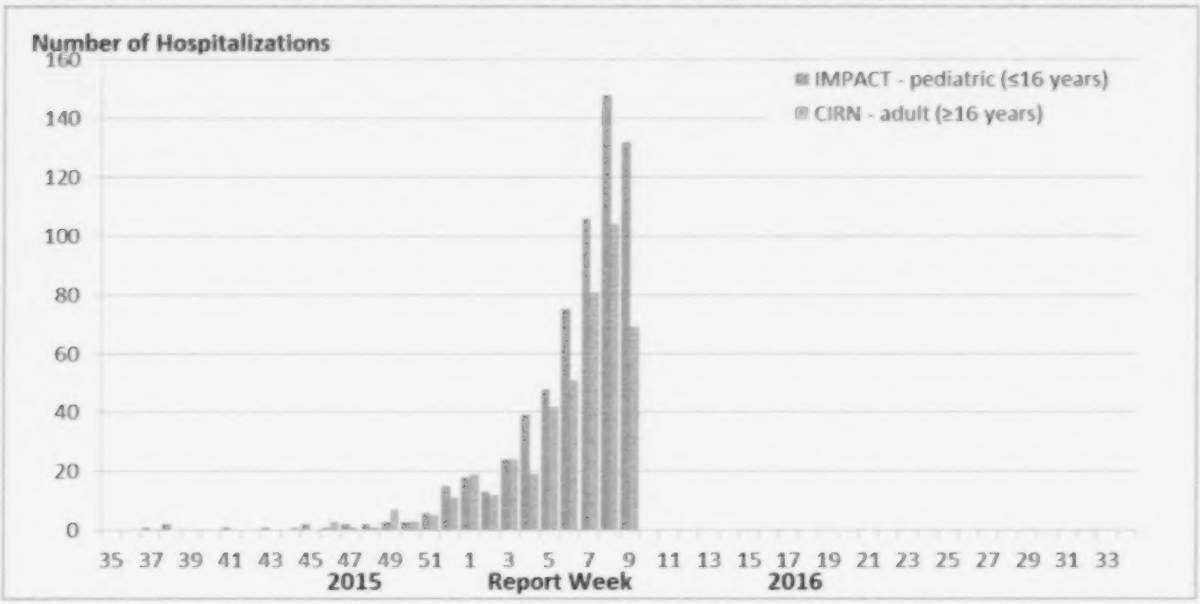
**Figure 7 – Number of hospitalized cases of influenza reported by sentinel hospital networks, by week, Canada, 2015-16, pediatric and adult hospitalizations (≤16 years of age, IMPACT; ≥16 years of age, CIRN-SOS)**




*Not included in Table 2 and Figure 6 are two IMPACT cases that were due to co-infections of influenza A and B.

**Adult Influenza Hospitalizations and Deaths**

In week 09, 69 hospitalizations were reported by the Canadian Immunization Research Network Serious Outcome Surveillance (CIRN-SOS). The largest proportion of hospitalizations were in adults 65+ years of age (52%) and due to influenza A (88%).

To date this season, 453 laboratory-confirmed influenza-associated adult (≥16 years of age) hospitalizations have been reported by CIRN-SOS (Table 3). The majority of hospitalized cases were due to influenza A (88%) and the largest reported proption were among adults ≥65 years of age (49%). Fifty-eight intensive care unit (ICU) admissions have been reported and among those, 51 (88%) were due to influenza A. A total of 29 ICU cases (50%) reported to have at least one underlying condition or comorbidity. Fifteen deaths have been reported this season.

**Table 3 – Cumulative numbers of adult hospitalizations (≥16 years of age) with influenza reported by CIRN-SOS, Canada, 2015-16**

| Age groups (years) | Cumulative (1 Nov. 2015 to 5 Mar. 2016) | | | | | |
|---|---|---|---|---|---|---|
| | Influenza A | | | | B | Influenza A and B |
| | A Total | A(H1) pdm09 | A(H3) | A(UnS) | Total | # (%) |
| 16-20 | <5 | <5 | 0 | <5 | 0 | <5 |
| 20-44 | 64 | 20 | <5 | x | 16 | 80 (18%) |
| 45-64 | 133 | 32 | <5 | x | 12 | 145 (32%) |
| 65+ | 193 | 32 | 16 | 145 | 27 | 220 (49%) |
| Unknown | <5 | x | 0 | <5 | 0 | <5 |
| Total | 398 | 87 | 20 | 291 | 55 | 453 |
| % | 88% | 22% | 5% | 73% | 12% | 100% |

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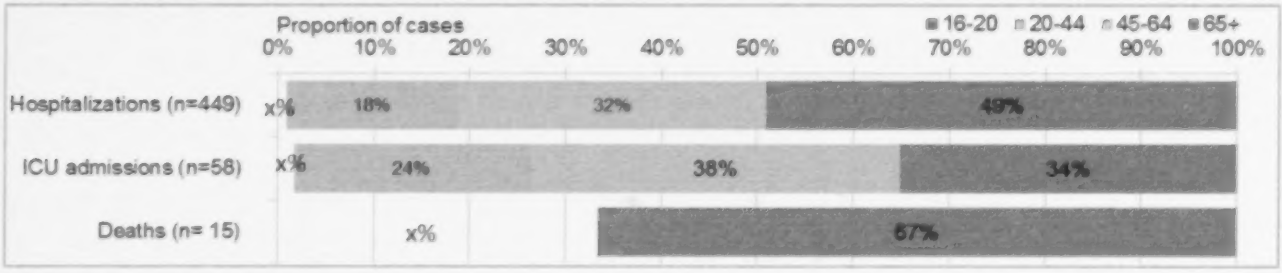
**Figure 8 – Percentage of hospitalizations, ICU admissions and deaths with influenza reported by age group (≥16 year of age), CIRN-SOS, Canada 2015-16**




Note: The number of hospitalizations reported through CIRN-SOS and IMPACT represents a subset of all influenza-associated adult and paediatric hospitalizations in Canada. Delays in the reporting of data may cause data to change retrospectively.

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## Provincial/Territorial Influenza Hospitalizations and Deaths

In week 09, 417 hospitalizations have been reported from participating provinces and territories*. The majority of hospitalizations were due to influenza A (86%). The largest proportion of cases reported in week 09 were in adults 65+ years of age (29%) followed closely by adults 45-64 years of age (28%).

Since the start of the 2015-16 season, 2,081[1] laboratory-confirmed influenza-associated hospitalizations have been reported. A total of 1,832 hospitalizations (88%) were due to influenza A and 249 (12%) were due to influenza B. Among cases for which the subtype of influenza A was reported, 91% (1022/1117) were influenza A(H1N1). The largest proportion (28%) of hospitalized cases were ≥65 years of age, followed closely by adults 45-64 years of age (26%). Two hundred and twenty-five ICU admissions have been reported of which 206 (92%) were due to influenza A and 78 (44%) were in the 45-64 age group. A total of 59 deaths have been reported, all due to influenza A. The largest proportion of deaths were reported in adults 45-64 years of age, representing 49% of deaths.

**Figure 9 – Percentage of hospitalizations, ICU admissions and deaths with influenza reported by age group, Canada 2015-16**

* Note: Influenza-associated hospitalizations are not reported to PHAC by the following Provinces and Territory: BC, NU, and QC. Only hospitalizations that require intensive medical care are reported by SK. ICU admissions are not distinguished among hospital admissions reported from ON. Data may also include cases reported by the IMPACT and CIRN-SOS networks. The number of new influenza-associated hospitalizations and deaths reported for the current week may include cases from ON that occurred in previous weeks, as a result of retrospective updates to the cumulative total. It is important to note that the hospitalization or death does not have to be attributable to influenza, a positive laboratory test is sufficient for reporting.

x - Suppressed to prevent residual disclosure

[1]Includes three hospitalizations for which age is unknown

See additional data on Reported Influenza Hospitalizations and Deaths in Canada: 2011-12 to 2015-16 on the Public Health Agency of Canada website.

## Influenza Strain Characterizations

During the 2015-16 influenza season, the National Microbiology Laboratory (NML) has characterized 766 influenza viruses [132 A(H3N2), 436 A(H1N1) and 198 influenza B].

**Influenza A (H3N2):** When tested by hemagglutination inhibition (HI) assays, 28 H3N2 virus were antigenically characterized as A/Switzerland/9715293/2013-like using antiserum raised against cell-propagated A/Switzerland/9715293/2013.

Sequence analysis was done on 104 H3N2 viruses. All viruses belonged to a genetic group for which most viruses were antigenically related to A/Switzerland/9715293/2013. A/Switzerland/9715293/2013 is the A(H3N2) component of the 2015-16 Northern Hemisphere's vaccine.

**Influenza A (H1N1)**: A total of 436 H1N1 viruses characterized were antigenically similar to A/California/7/2009, the A(H1N1) component of the 2015-16 influenza vaccine.

**Influenza B:** A total of 66 influenza B viruses characterized were antigenically similar to the vaccine strain B/Phuket/3073/2013. A total of 132 influenza B viruses were characterized as B/Brisbane/60/2008-like, one of the influenza B components of the 2015-16 Northern Hemisphere quadrivalent influenza vaccine.

The recommended components for the 2015-2016 Northern Hemisphere trivalent influenza vaccine include: an A/California/7/2009(H1N1)pdm09-like virus, an A/Switzerland/9715293/2013(H3N2)-like virus, and a B/Phuket/3073/2013 -like virus (Yamagata lineage). For quadrivalent vaccines, the addition of a B/Brisbane/60/2008-like virus (Victoria lineage) is recommended.
The NML receives a proportion of the influenza positive specimens from provincial laboratories for strain characterization and antiviral resistance testing. Characterization data reflect the results of haemagglutination inhibition testing compared to the reference influenza strains recommended by WHO.

## Antiviral Resistance

During the 2015-16 season, the National Microbiology Laboratory (NML) has tested 616 influenza viruses for resistance to oseltamivir, 619 for resistance to zanamivir and 520 influenza viruses for resistance to amantadine. All but one tested viruses were sensitive to oseltamivir. All viruses tested for resistance were sensitive to zanamivir. A total of 519 influenza A viruses (99%) were resistant to amantadine (Table 4).

**Table 4 – Antiviral resistance by influenza virus type and subtype, Canada, 2015-16**

| Virus type and subtype | Oseltamivir | | Zanamivir | | Amantadine | |
|---|---|---|---|---|---|---|
| | # tested | # resistant (%) | # tested | # resistant (%) | # tested | # resistant (%) |
| A (H3N2) | 124 | 0 | 124 | 0 | 134 | 133 (99.3%) |
| A (H1N1) | 337 | 1 | 340 | 0 | 386 | 386 (100%) |
| B | 155 | 0 | 155 | 0 | NA[1] | NA[1] |
| TOTAL | 616 | 1 | 619 | 0 | 520 | 519 |

[1]NA: Not Applicable

## International Influenza Reports

*World Health Organization influenza update*
*World Health Organization FluNet*
*WHO Influenza at the human-animal interface*
*Centers for Disease Control and Prevention seasonal influenza report*
*European Centre for Disease Prevention and Control - epidemiological data*
*South Africa Influenza surveillance report*
*New Zealand Public Health Surveillance*
*Australia Influenza Report*
*Pan-American Health Organization Influenza Situation Report*

**FluWatch Definitions for the 2015-2016 Season**

**Abbreviations**: Newfoundland/Labrador (NL), Prince Edward Island (PE), New Brunswick (NB), Nova Scotia (NS), Quebec (QC), Ontario (ON), Manitoba (MB), Saskatchewan (SK), Alberta (AB), British Columbia (BC), Yukon (YT), Northwest Territories (NT), Nunavut (NU).

**Influenza-like-illness (ILI)**: Acute onset of respiratory illness with fever and cough and with one or more of the following - sore throat, arthralgia, myalgia, or prostration which is likely due to influenza. In children under 5, gastrointestinal symptoms may also be present. In patients under 5 or 65 and older, fever may not be prominent.

**ILI/Influenza outbreaks**

**Schools:** Greater than 10% absenteeism (or absenteeism that is higher (e.g. >5-10%) than expected level as determined by school or public health authority) which is likely due to ILI. Note: it is recommended that ILI school outbreaks be laboratory confirmed at the beginning of influenza season as it may be the first indication of community transmission in an area.

**Hospitals and residential institutions:** two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case. Residential institutions include but not limited to long-term care facilities (LTCF) and prisons.

**Workplace:** Greater than 10% absenteeism on any day which is most likely due to ILI.

**Other settings:** two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case; i.e. closed communities.

*Note that reporting of outbreaks of influenza/ILI from different types of facilities differs between jurisdictions.*

**Influenza/ILI Activity Levels**

**1 = No activity:** no laboratory-confirmed influenza detections in the reporting week, however, sporadically occurring ILI may be reported

**2 = Sporadic:** sporadically occurring ILI and lab confirmed influenza detection(s) with **no outbreaks** detected within the influenza surveillance region†

**3 = Localized:** (1) evidence of increased ILI* ;
(2) lab confirmed influenza detection(s);
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring in **less than 50% of the influenza surveillance region**†

**4 = Widespread:** (1) evidence of increased ILI*;
(2) lab confirmed influenza detection(s);
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring **in greater than or equal to 50% of the influenza surveillance region**†

*Note: ILI data may be reported through sentinel physicians, emergency room visits or health line telephone calls.*

** More than just sporadic as determined by the provincial/territorial epidemiologist.*

*† Influenza surveillance regions within the province or territory as defined by the provincial/territorial epidemiologist.*

*We would like to thank all the Fluwatch surveillance partners who are participating in this year's influenza surveillance program.*

This report is available on the Government of Canada Influenza webpage under Weekly influenza reports.

Ce rapport est disponible dans les deux langues officielles.